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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/628,546	07/28/2003	Bo Thiesson	MS305277.1/MSFTP485US	6935

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AMIN & TUROCY, LLP
1900 EAST 9TH STREET, NATIONAL CITY CENTER
24TH FLOOR,
CLEVELAND, OH 44114

EXAMINER

DAVIS, GEORGE B

ART UNIT	PAPER NUMBER
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2129

DATE MAILED: 12/09/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/628,546	Applicant(s) THIESSON ET AL.	
	Examiner George Davis	Art Unit 2129	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 28 July 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-24 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-24 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Drawings

1. The drawings are objected to because figures 2 and 8, arrowheads should be shown at input and output of each device. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

2. Figure 9 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated (see Hulten et al, U.S. Pat. Appl. No. US 2004/0243548

A1, figure 10). See MPEP § 608.02(g). Corrected drawings in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Objections

3. Claim 10 is objected to because of the following informalities: Language of "claim 1" should be shown. Appropriate correction is required.

Claim Rejections - 35 USC § 112

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claim 9 is rejected under 35 U.S.C. 112, second paragraph, as being incomplete for omitting essential steps, such omission amounting to a gap between the steps. See MPEP § 2172.01. The omitted steps are definitions of m, S, U, Alpha and Beta.

Claim Rejections - 35 USC § 101

5. 35 U.S.C. 101 reads as follows:

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Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

Claims 1-24 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter.

The language of the claims raises a question as to whether the claim is directed merely to an abstract idea that is not tied to a technological art, environment or machine which would result on a practical application producing a concrete, useful, and tangible result to form the basis of statutory subject matter under 35 U.S.C. 101. The specification hints that the apparatus claims 1-10 are directed to non-statutory subject matter because the specification recites that the terms "component" and "model" could be a software program (see page 6, lines 6-10). Assigning or describing scores to branches of a tree in the claimed invention would not result in a practical application producing a concrete, useful, and tangible result. Therefore, the claimed invention is directed to non-statutory subject matter.

Claim Rejections - 35 USC § 102

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1-8, 10-16, 19 and 21-24 are rejected under 35 U.S.C. 102(e) as being anticipated by Hulten et al, U.S. Pat. Appl. No. US 2004/0243548 A1.

As per claim 1, Hulten discloses a learning component that generates non-standardized data that relates to a split in a decision tree (labeled data related to a split in a decision tree, see section 0044, lines 1-14) and a scoring component that scores the split as if the non-standardized data at a subset of leaves of the decision tree had been shifted and/or scaled (evaluating a score according to a scalable decision tree, see section 0044, lines 19 and 19 and section 0030, last two lines).

As per claim 2, Hulten discloses a modification component that for a respective candidate split score (see section 0070, lines 7-11), the data is modified by shifting and/or scaling the data (scalable data manipulation can be modified, see section 0048, lines 14 and 15) and a new score is computed on the modified data (a local score of the new decision tree is consider a new score, see section 0044, lines 19 and 20).

As per claim 3, Hulten discloses an optimization component that analyzes the data (section 0013, lines 6-12) and decides to treat the data as if it was shifted, scaled, or shifted and scaled (scalable technique can be applied to data, see section 0039, lines 8 and 9).

As per claim 4, Hulten discloses the scoring component is employed for evaluating a data mining application (section 0032, lines 1-6).

As per claim 5, Hulten discloses the learning component processes continuous variable data or data subsets (see section 0027, line 10).

As per claim 6, Hulten discloses the scoring component generates evaluation

indicating how well a model predicts continuous target data (Bayesian network is good prediction model, see section 0046, last four lines) and whether or not the model is a suitable predictor for the target data (Bayesian network is well suited prediction model, see section 0046, last four lines).

As per claim 7, Hulten discloses the evaluation data is employed by users and/or subsequent automated components when determining model performance and/or selecting between models or model subsets (see figure 1, device 224 and section 0034).

As per claim 8, Hulten discloses the scoring component includes at least one of a data sample processor, a scoring constant, a gamma function, a matrix value, a vector value, and a mean value for data or a data subset (scoring using statistics uses mean value of a data, see section 0060, lines 1-3).

As per claim 10, Hulten discloses a computer readable medium having computer readable instructions stored thereon for implementing the scoring component of claim 1 (database storing computer instruction or a computer program, see section 0013, lines 1 and 2).

As per claim 11, Hulten discloses a system that facilitates data mining (section 0032, lines 1-6), means for automatically generating a set of non-standardized data associated with a set or subset of data relating to a continuous variable (see equation 1), the non-standardized data associated with a split in a decision tree (labeled data related to a split in a decision tree, see section 0044, lines 1-14) and means for automatically scoring the split as if the non-standardized data were shifted and/or

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scaled (evaluating a score according to a scalable decision tree, see section 0044, lines 19 and 19 and section 0030, last two lines).

As per claim 12, Hulten discloses means for determining whether to perform the shifting and/or scaling operations (scalable technique can be applied to data, see section 0039, lines 8 and 9).

As per claim 13, Hulten discloses means for shifting and/or scaling the set or subset of data relating to the continuous variable (scalable technique can be applied to data, see section 0039, lines 8 and 9).

As per claim 14, Hulten discloses determining whether to perform a virtual shifting and/or scaling operation on a non-standardized set of data associated with leaves of a decision tree (labeled data related to a split in a decision tree, see section 0044, lines 1-14) and automatically assigning scores to the leaves based in part upon the determination of whether to perform the virtual shifting and/or scaling operation (evaluating a score according to a scalable decision tree, see section 0044, lines 19 and 19 and section 0030, last two lines).

As per claim 15, Hulten discloses performing at least one actual scaling and/or shifting operation on the non-standardized set of data (scalable technique can be applied to data, see section 0039, lines 8 and 9).

As per claim 16, Hulten discloses processing a model in a form of a linear regression (regression learning algorithms are linear, see section 0048, lines 5-15).

As per claim 19, Hulten discloses determining at least one constant value before assigning the scores (we have a local score of a decision tree (constant) and a local

score (not constant) of new decision tree, see section 0044, lines 18-20).

As per claim 21, Hulten discloses a computer readable medium having a data structure stored thereon (database storing computer instruction or a computer program, see section 0013, lines 1 and 2), a first data field describing a non-standardized set or subset of data relating to a continuous variable (see equation 1), a second data field describing a decision tree and associated branches (sub-tree, see Table 1 and section 0072) and a third data field describing a score for the branches (see section 0072), the score computed for the branches as if the non-standardized set of subset of data had been shifted or scaled (evaluating a score according to a scalable decision tree, see section 0044, lines 19 and 19 and section 0030, last two lines).

As per claim 22, Hulten discloses a data field to indicate at least one of a virtual shifting operation and a virtual scaling operation (see section 0039, lines 8-10).

As per claim 23, Hulten discloses a data field to indicate at least a portion of the non-standardized set or subset of data is to be shifted and/or scaled (see section 0039, lines 8-10).

As per claim 24, Hulten discloses a data packet that passes between at least two computer processes (we have different type of scores of data performing different processes, see sections 0044), a first data field describing a non-standardized set or subset of data relating to a continuous variable (see equation 1) a second data field describing a decision tree and associated branches (sub-tree, see Table 1 and section 0072) and a third data field describing a score for the branches (see section 0072), the score computed for the branches as if the non-standardized set of subset of data had

been shifted and/or scaled (evaluating a score according to a scalable decision tree, see section 0044, lines 19 and 19 and section 0030, last two lines).

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 17, 18 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hulten et al, U.S. Pat. Appl. No. US 2004/0243548 A1 in view of Chickering et al as applied to claims 1-8, 10-16, 19 and 21-24 above, and further in view of Chickering et al, "Efficient Determination of Dynamic Split Points in a Decision Tree", Proceedings of the IEEE International Conference of Data Mining, 29 Nov. – 2 Dec. 2001.

As per claim 17, Hulten et al does not teach the virtual shifting operation includes omitting a matrix operation from the assignment of scores. However, Chickering et al teaches the virtual shifting operation includes omitting a matrix operation from the assignment of scores (the scores used in this reference are not of matrix values, see page 92, first col., lines 3-23). It would have been obvious to one of ordinary skill in the art to at the time the invention was made to use matrix in a calculation of a decision tree learning to provide and accurate and simple calculation.

As per claim 18, Hulten et al does not teach the virtual shifting operation includes modifying a subset of elements relating to a covariance matrix. However, Chickering et

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al teaches the virtual shifting operation includes modifying a subset of elements relating to a covariance matrix (average increase of Census and Media Matrix can be shifting and modifying of a data using matrix, page 95, second col. first paragraph). It would have been obvious to one of ordinary skill in the art to at the time the invention was made to use matrix in a calculation of a decision tree learning to provide and accurate and simple calculation.

As per claim 20, Hulten et al does not teach the constant value relates to diagonal elements of a matrix and is assigned a value of about 0.01. However, Chickering et al teaches the constant value relates to diagonal elements of a matrix and is assigned a value of about 0.01 (in Media matrix, $k=0.01$, see page 95, second col., third paragraph). It would have been obvious to one of ordinary skill in the art to at the time the invention was made to use matrix in a calculation of a decision tree learning to provide and accurate and simple calculation.

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to George Davis whose telephone number is (571) 272-3683. The examiner can normally be reached on Monday through Friday from 10:00 am to 6:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Vincent, can be reached on (571) 272-3080. The fax phone number for the organization where this application or proceeding is assigned is (571) 273-3800.

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A handwritten signature in black ink, consisting of a series of loops and a long horizontal stroke.

GEORGE B. DAVIS

PRIMARY PATENT EXAMINER